DOCUMENT RESUME

ED 385 241 IR 017 253

AUTHOR Topp, Neal; And Others
TITLE Research Project: An Appraisal of the Impact of Nebraska's Statewide Internet Implementation.
INSTITUTION Association for the Advancement of Computing in Education, Charlottesville, VA.; Nebraska Univ., Omaha.
PUB DATE 95
NOTE 5p.; In: Technology and Teacher Education Annual, 1995. Proceedings of the International Conference of the Society for Information Technology and Teacher Education (SITE) (6th, San Antonio, Texas, March 22-25, 1995); see ED 381 148.
PUB TYPE Reports - Descriptive (141)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Computer Assisted Instruction; *Elementary Secondary Education; *Evaluation Methods; Instructional Material Evaluation; Interviews; Professional Development; *Program Effectiveness; School Surveys; Teacher Attitudes; Teacher Characteristics; Teacher Education; Teacher Role; *Use Studies
IDENTIFIERS *Internet; Nebraska; *Telecomputing

ABSTRACT

This paper provides an overview of Nebraska's K-12 Internet Evaluation Project, undertaken cooperatively between the University of Nebraska at Omaha and the Nebraska Consortium of Educational Service Units. The purpose of the project is to document the implementation model and effectiveness of its K-12 telecomputing activities as they impact upon the classrooms and student of Nebraska. The design of the evaluation is that of an impact analysis with three primary types of data including: (1) teacher survey and interview data; (2) machine usage data; and (3) documented classroom uses. The evaluation process is both formative and comprehensive in nature, and includes research questions about the following: frequency and patterns of Internet usage by teachers and students after teacher Internet training, developments in the usage pattern, sharing of expertise, relationships between teacher characteristics and teacher Internet use, the impact on teacher roles, teacher attitudes about the impact of Internet usage on schools, and strengths and weaknesses for involving Internet in K-12 education. A 30-question survey was developed and incorporated into the training program; a total of 767 surveys were summarized for the initial 6 month reporting period. Implications from the first survey indicate that a variety of teachers are becoming involved; a wide variety of computer-background skills exist; expectations about technology use are low initially; teachers being trained have a "student involvement" philosophy; keyboarding skills are a potential problem; and cooperation among Nebraska institutions is high. (Contains 11 references.) (AEF)

Research Project: An Appraisal of the Impact of Nebraska's Statewide Internet Implementation

Neal Topp
University of Nebraska at Omaha

Neal Grandgenett
University of Nebraska at Omaha

Bob Mortenson
University of Nebraska at Omaha

ED 385 241

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Neal Topp

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

R017053

BEST COPY AVAILABLE

The purpose of this paper is to provide an overview related to Nebraska's K-12 Internet Evaluation Project, undertaken cooperatively between the University of Nebraska at Omaha and the Nebraska Consortium of Educational Service Units. The project is funded in part by the U.S. Department of Education. The project is in its first year, and the evaluation model being used has been developed and tailored to the situation in Nebraska. This paper overviews the developed model, as well as some initial results from the first six-month reporting period.

The following are the goals of the Internet Evaluation Project which focus on long range research and assessment, targeted at five years, of the integration of the Internet in the K-12 Nebraska schools and the support related to this integration delivered by the Nebraska Educational Service Units. The goals for the first six months of the project are to:

1. Design, organize and begin a formative evaluation and action research process
2. Design and implement a pre-training survey for newly trained teachers
3. Develop a format for gathering machine usage data related to the Internet
4. Begin to collect examples of innovative classroom uses of the Internet
5. Report on the initial six month progress of the evaluation process
6. Submit external funding proposal(s) to enhance the evaluation process

Background

The Internet is the world's largest computer network. It was born more than 20 years ago as a U.S. Defense Network, with the purpose of supporting military research, through a communications structure which could survive a limited nuclear attack. In the late 1980's the National Science Foundation expanded the network to encompass scientific and higher education institutions. Since that time the Internet has expanded commercially and internationally, and is now resident within more than 140 countries worldwide (Calcari, 1994; Pawlowski, 1994), and links at least 5,000 computer networks and over 300,000 host computers (Kearsley, 1993). The Internet provides the efficient exchange of computer-based data across the globe. In addition, it provides users access to a wide variety of long range network based computing (called telecomputing) activities, including direct access to electronic mail, network supercomputers, and extensive on-line databases, software, and newsgroups.

Although the Internet was initially envisioned as a "data superhighway" for the government, scientific, and higher education institutions, K-12 schools and school districts are now showing a real interest in being a part of the Internet and its related telecomputing activities.

For the K-12 classroom, the Internet access offers the potential of "breaking down the classroom walls", and linking a classroom microcomputer with any computer on this international network. Thus, a fifth grade student in Fort Calhoun, Nebraska might exchange electronic mail

with a fifth grade student in Melbourne, Australia, or receive actual pictures of Mars from NASA, or perhaps search a national database for the most recent U.S. Supreme Court ruling. It is anticipated that the Internet will parallel or exceed the substantial adoption into education of the classroom microcomputers (Krol, 1993).

Although K-12 teachers are beginning to have access to the Internet, much of their current activities are facilitated by the knowledge, equipment, and motivation of individual teachers. However, statewide support in the nation is increasing, and many states are beginning to envision statewide plans for supporting at least some type of general technology network (television, satellite, telecomputing, etc.) for their resident schools and districts. In addition, nine states have been identified as possible leaders in K-12 telecomputing planning and adoption, as they already set up early statewide plans (Kurshan, 1990; McAnge, et. al., 1990; Web Associates, 1993). These states include Arizona, Florida, Indiana, New Mexico, Pennsylvania, Texas, Virginia, West Virginia, and Nebraska. Yet this core group includes only nine of the nation's fifty states (18%); and many of the other states will look to this core group for input related to their ongoing statewide efforts.

The state of Nebraska is now in a position to add to the emerging national picture of telecomputing use and potential for K-12 education, and carefully examine its own approach to impacting student learning through statewide use of the Internet. Nebraska has long had a strong support network of 19 Educational Service Units, which have since 1966, provided the state's public schools with many resources, including significant computer data and information services (Nebraska Educational Service Units, 1991). Building on this statewide expertise, the Nebraska Legislature recently passed Legislative Bill 452, which authorized the local educational service units to levy an additional property tax to support the introduction of Internet equipment and teacher training for Nebraska schools. This statewide effort has recently begun, and the Educational Service Units are now working with their local school districts to bring them on-line (Nebraska Department of Education, 1993).

A research team from the University of Nebraska at Omaha have been contracted by the Nebraska Educational Service Units to evaluate this statewide approach to Internet connections for schools. This team, directed by Dr. Neal Topp and Dr. Neal Grandgenett, is currently investigating action research questions that include: What is the frequency and patterns of Internet usage by teachers and students in the state of Nebraska following teacher Internet training? Is the usage pattern spreading? Are trained teachers sharing their expertise with other teachers? Are there relationships between teacher characteristics, teacher perceptions, and teacher Internet use? Does the Internet impact the role of teachers? How does Internet usage impact students and their learning? How do teachers perceive Internet usage to be impacting schools? (i.e. does Internet usage contribute to breaking down the walls of the classroom?) What are the strengths and weaknesses of the Nebraska model for involving Internet in K-12 education? Within the partnership with the Nebraska Educational Service Units, the University of Nebraska at Omaha research team is coordinating the evaluation project, and the Educational Service Units are facilitating the data collection procedures. The evaluation process is both formative and comprehensive in nature, and will be ongoing for at least the next five years.

As a national leader in K-12 integration of the Internet, Nebraska is aware of the responsibility of carefully documenting the implementation model and effectiveness of its K-12 telecomputing activities, as these activities impact upon the classrooms and students of Nebraska. This is the purpose of the Nebraska Internet Evaluation Project. The more we know about the success and failure of statewide Internet activities in K-12 contexts, the better able we will be to help all students and teachers use the Internet to its full potential, not only in Nebraska, but in the United States as a whole.

Design of the Evaluation

The design of the evaluation is essentially that of an "impact analysis." In evaluation studies, impact analysis can be defined as meaning "determining the extent to which one set of directed human activities affected the state of some objects or phenomena, and . . . determining why the effects were as large or small as they turned out to be" (Mohr, 1992, p.1). In this evaluation project the evaluation design is focused on the action research questions which seek to determine the general impact of the Internet, and Internet training, facilitated by the Educational Service Units, on K-12 education in Nebraska, or specifically on teachers and their students in the classroom.

Within the evaluation three primary types of data are being examined related to the research questions. These data types include 1) teacher survey and interview data, 2) machine usage data, and 3) documented classroom uses. Initial evaluation goals were associated with making progress in each of these three areas. Descriptive statistics are used currently in the six-month formative stage of the evaluation process, with correlational and pattern analysis targeted for later reporting periods. The initial progress in each of the three data areas are summarized in the following subsections.

Preliminary Progress of Survey Analysis

To help get baseline information and perceptions from teachers before they received the Internet training offered by the Nebraska Educational Service Units, a 30 question survey was developed. This survey was designed to be read by NCS scan equipment, so that a single sheet could be provided at the beginning of the training sessions. It was field tested and refined based on teacher and trainer feedback.

Initial incorporation of the survey into the training program as the Educational Service Units begin their training activities has been excellent, and a total of 767 surveys were summarized for the initial six-month reporting period. The next reporting period, in January 1995, will

include over 3000 returned surveys. The surveys will continue to be given as teachers are trained across the state, to provide pretraining baseline information from teachers. A six-month follow-up survey to the trained teachers was also developed, and used both Likert scale and open-ended responses. This second survey is in the process of being returned, and was sent by both electronic and ground mail. Eventually, after all Educational Service Units have initiated training activities and contributed survey data, a detailed correlational analysis, and interpretation by an advisory committee, will be conducted related to the information.

Preliminary Progress of Machine Analysis

An important component of the evaluation process will also be to examine the general server usage established by the Educational Service Units to support K-12 Internet access in the state. With the help of some technical specialists, software is being developed which will electronically report server usage data at the end of each month from each of the Educational Service Units, to be used in an automatic monthly report. The target date for full implementation of this data collection procedure is by the end of the first year (January, 1995), and permission was recently received to implement the related data collection process. This information will also facilitate some of the follow-up surveys and interviews. The reporting software is currently being developed, and will record information related to monthly account totals, CPU usage, total logins, and patterns in system use.

Preliminary Progress of Innovative Use Summary

Another component of the evaluation is to document some of the innovative uses of the Internet in K-12 classrooms in Nebraska. These uses will be in an "annotated list" format, eventually available over the Internet. Innovative classroom uses existing in Nebraska are being identified with the assistance of the two electronic surveys, as well as follow-up phone interviews. Classroom observations, documented via videotapes, will also be conducted as the situation warrants.

The evaluation team is also working with the Consortium of Educational Service Units to develop a Mosaic page format for linking to innovative student and teacher examples, to operate as an "electronic portfolio" of innovative uses which fit this particular format. The Mosaic page will also provide an update on the current evaluation progress and relevant statistics, and will be freely accessible by everyone who wishes to learn more about what is happening related to the Internet in Nebraska. The Mosaic page is targeted to be online by the third reporting period (July, 1995).

Implications from the First Survey

The evaluation process is in in its preliminary stages, and is currently focusing on refining the evaluation process and data collection procedures. However, several implications and recommendations were already apparent from the initial descriptive statistics and observations of the first pre-training surveys. These initial recommendations from the first six-month reporting period are listed below.

A variety of teachers are becoming involved in the training.

This is apparent from the wide range of initial demographic information related to the pre-training teacher surveys. The mix of teachers indicated that initial participation in the training process is inclusive to most groups and levels of teachers.

A wide variety of computer-related background skills exist for teachers entering training.

It is apparent that little can be assumed related to what teachers already know about computers, or the Internet in particular, when entering Nebraska training. Responses to Internet related questions suggested that Nebraska teachers know very little about the Internet before beginning the training process.

Teachers bring very little knowledge related to their planned integration of Internet into the classroom.

Based on their responses to an open-ended question regarding expected use, it is apparent that the first group of Nebraska teachers to be trained are entering training with virtually no personal plans or expectations related to integrating the Internet into their classrooms, or how they might eventually use the Internet with their students. It was recommended that training activities should continue to recognize this low level of initial teacher awareness and expectation, and plan for the continued support of classroom use.

The first teachers being trained seem to have a "student involvement" philosophy.

This is indicated by the responses to questions related to student projects, research, and group work. The teachers stepping forward to initially be trained appear to generally support non-traditional and student-centered activities in their classrooms.

The keyboarding or typing skills of some teachers is a possible problem.

This is indicated by the small but significant percentage of teachers entering training who rate their keyboarding skills as "slow" or "very slow." This 10% of the respondents may find Internet use to be a particularly difficult challenge.

There are already some innovative uses of the Internet underway by Nebraska teachers.

Innovative uses of the Internet are already emerging from the Nebraska area, and several teachers are involved in lessons which are worthy of national level recognition. It was recommended that some consideration be given to the best way to use these "success stories", for assisting statewide implementation of the Internet.

There seems to be exceptional cooperation among Nebraska institutions at this time related

to implementation of LB 452.

In its first report, the evaluation team noted a very high level of cooperation among the Nebraska Educational Service Units, as well as other contributing organizations, such as the University of Nebraska, the Nebraska Department of Education, and the Nebraska Legislature. This was apparent from the joint activities related to hardware and software consulting, the joint collection of innovative lessons, the development of a joint training manual, and the shared planning related to statewide training and evaluation.

Summary

It was apparent from the initial six month reporting period, that the state of Nebraska has made an excellent start on a very difficult but worthwhile task. It is a difficult task, because Nebraska is truly ahead of most states in trying to bring the Internet into K-12 classrooms, and in particular, legislatively funding the activity, so there are few others to look to for guidance. It is a worthwhile task, because of the Internet's very exciting potential for impacting education in the state of Nebraska, as well as the nation. It would seem that the Internet does provide a chance to truly break down the walls of individual classrooms, and to make available the vast sources of information around the world. This is particularly important in Nebraska, a state with a relatively small population, but the most individual school districts of any state within the United States.

As the formal evaluation project continues to evolve, a unique opportunity is provided to examine how an entire state confronts one of the greatest innovations and challenges that has come to education in some time. The evaluation process itself will help teachers from the field to have a collective as well as individual voice regarding the progress of this new challenge, and what can be done to help ensure that these teachers are supported effectively.

The formal evaluation process will continue to be refined and expanded as the amount of data grows, and as teachers are trained and attempt to use the Internet in their classrooms. Like the Internet, the evaluation process will be dynamic rather than static. Yet the underlying purpose of the evaluation project will remain unchanged, which is fundamentally to help the students of Nebraska receive the maximum benefit of the resources being brought to bear on their behalf, and to help bring them into the 21st century of education, through an effective integration of the Internet into the K-12 classrooms of Nebraska.

References

Calcari, S. (1994). A snapshot of the Internet. *Internet World, 5*(6), 54-58.

Grantham, C. E., & Vaske, J. J. (1985). Predicting the usage of an advanced communication technology. *Behaviour and Information Technology, 4*, 327-335.

Kearsley, G. (1993, Autumn/Winter). Education@Internet. *EDTECH Review*, 43-45.

Krol, E. (1993). *The Whole Internet*. Sebastopol, CA: O'Reilly and Associates.

Kurshan, B. (1991) EduCorp statewide survey. In R. F. Tinker & K. P. Kapisovsky (Eds.), *Consortium for Educational Telecomputing Conference Proceedings* (pp. 43-53). Cambridge, MA:TERC.

McAnge, T. R. (1990). *A survey of educational computing networks*. Blacksburg, VA, Virginia Polytechnic Institute and State University.

Mohr, L. B. (1992). *Impact Analysis for Program Evaluation*. Newbury Park, California: Sage Publications.

Nebraska Department of Education. (1993). NEnet: The Implementation of LB452. *Nebraska Department of Education Newsletter: The Circuit*. (Available from Nebraska Department of Education, P.O. Box 94987, 301 Centennial Mall South, Lincoln, Nebraska, 68509.)

Nebraska Educational Service Units. (1991). *Assisting Nebraska's Schools and Children*. Lincoln, NE: Nebraska Department of Education.

Pawloski, R. (1994). How I found out about the Internet. *Educational Leadership, 51*(7), 69-73.

Webb Associates. (1993). TENET after one year. Naples, FL: author.

Neal Topp is an Assistant Professor of Educational Technology, in the College of Education at the University of Nebraska at Omaha, Omaha, Nebraska, 68182. Phone (402) 554-3666, e-mail: topp@unomaha.edu.

Neal Grandgenett is an Associate Professor of Mathematics Education, in the College of Education at the University of Nebraska at Omaha, Omaha, Nebraska, 68182. Phone (402) 554-2690, e-mail: grandgen@unomaha.edu.

Bob Mortenson is the Associate Dean in the College of Education at the University of Nebraska at Omaha, Omaha, Nebraska, 68182. Phone (402) 554-2719, e-mail: morten@unomaha.edu.

BEST COPY AVAILABLE